

## EDITORIAL ARTICLES.

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### MELCHIOR ON THE CONSERVATIVE TREATMENT OF HÆMARTHOSIS OF THE KNEE-JOINT.<sup>1</sup>

There are, at the present, two methods of treatment of hæmarthrosis of the knee-joint: the operative and conservative methods. Formerly, during the pre-antiseptic period, there was no doubt as to the choice; indeed, there was then but one mode of treatment, viz., the conservative, for no one would have been so foolhardy as to attempt a dangerous procedure while the conservative treatment offered quite a certainty of success. Jarjavay, in 1863, tried puncture of the knee-joint, but this found only few advocates, as the dangers were great and the results doubtful. With the introduction of antiseptics this procedure was accepted and recommended by such men as Volkmann and Schede, as well as by Esmarch, König, Kocher, Broca and Sabbe, and everywhere gained ground at the expense of the conservative method.

In Scandinavia, as well, a change occurred in favor of treatment by puncture. Already in 1871 Ludv. Jacobson<sup>2</sup> published two cases, successfully treated by puncture, without irrigation, and in 1880, O. Lecher (*Hospitals-Tidenæ*, 2, R. viii, No 27) communicated a series of seventeen cases from the "Kommune-Hospital" in Copenhagen, in which he had employed puncture followed by antiseptic irrigation, with satisfactory results. While Jacobson's advocacy of this method is apparently not even warm, Lecher, on the contrary, con-

<sup>1</sup>Dr. Max Melchior, of Copenhagen, *Hospitals-Tidende*, 1890, 3. Rakke, viii, 26 and 27, pp. 653 and 682.

<sup>2</sup>Behandlingen af Ansamlinger i Knæleddet med Punktur og Stivelse-Bandage (Treatment of Effusions into the Knee-Joint by Means of Puncture and the Fixation-Bandage), *Ugeskrift f. Læger*, 3, R. xi, No. 6 and 7.

cludes that it will be of service in large hospitals, but will hardly be accepted as the general method. Finally, in 1886, Dr. J. Bondesen, having more material at his disposal, made a comparison between the results of the conservative and operative treatment. He arrived, as a result of his investigations, at the conclusion that treatment by puncture gave a shorter and more rapid course of the disease, and a more complete recovery than the older conservative method. Dr. Bondesen's cases were, however, taken from an epoch when the means used by the author (epithemata, compression, immobilization, etc.) were not employed. Therefore one can only decide as to whether puncture is preferable to the earlier method of conservative treatment, but the question of "puncture or not?" still remains open. The writer has, therefore, collected all the cases of hæmarthrosis which had been treated by Dr. O. Bloch in the "Frederick Hospital" (Copenhagen), during the last four years. In accordance with the general acceptation of to-day the diagnosis of hæmarthrosis was made in every case of acute traumatic collection in the knee-joint, excluding, of course, those cases where hæmarthrosis was a by-symptom of some simultaneously existing greater lesion, *e. g.*, fracture of the patella. It may be, indeed, very difficult or even impossible to make a diagnosis of uncomplicated hæmarthrosis for under this clinical picture the most varied forms may conceal themselves, as the distended capsule renders examination of the inner portion of the joint so difficult that lesions (*e. g.*, a little fissure, an intra-articular fracture, a contusion or a fracture of some osseous portion, a lesion of the intra-articular cartilages or of the internal ligaments) may be present, and only recognized in the later course of the case. The writer then analyzes his material and compares it point for point with the cases of Dr. Bondesen, which were treated by puncture.

In all, during the time mentioned, forty one patients had been treated for hæmarthrosis, but as two were punctured only thirty-nine remain for comparison. Two of them were women, the remainder men. For the greatest part they were working men or sailors from 20 to 50 years of age; four of the patients were over 50 and four under 20 years old. The cause has most often been a fall, a kick, a blow,

a jolt or some similar accident; but in not less than nine cases had distortion occurred. The majority of them entered the hospital on the day following the injury. In seven cases an increase of 3 cm. in the circumference of the knee was observed; three cases presented effusion with no increase in size. Five cases had to be excluded in the comparison, on account of complications. There remain, finally, thirty-five cases of Dr. Bloch to be compared with fifty-seven cases of Dr. Bondesen.

1. Fifty-seven cases of hæmarthrosis of the knee-joint treated by punctures and subsequent antiseptic irrigation yielded, on the average, a period of treatment, counting from the day of the injury, of 24.3 days; reckoning from the day of entrance into the hospital of 22.4 days.

Of these 57 cases, were discharged as completely cured, 49; as incompletely cured, or where treatment was interrupted, 8.

2. Thirty-five cases of hæmarthrosis of the knee-joint, treated conservatively, counted from the day of the injury, yielded on an average 19.06 days; reckoned from the day of entrance into the hospital 16.11 days (on an average). Of these 35, were discharged as completely cured, 26 as improved, 9.

Those discharged as cured had a normal condition of the knee, no effusion, no pains and good functions of the joint. A slight collection or effusion with even good function and a completely free gait were regarded as sufficient reasons to put the patient under the "improved" and not the "cured" rubric.

Of the 9 patients which left the hospital "improved," 8 were discharged at their own demand, simply because they felt well enough to go about. In all these 9 cases there remained a slight effusion, but motion, as a rule, was good. If, however, only the completely cured be compared, there results for treatment by puncture an average period of treatment of 21.30 days; while for the conservative plan an average of 18 days is obtained.

1. Of the 49 cases treated by puncture there were discharged before the twentieth day, 53%; after the twentieth day, 47%.

2. Of the 26 cases treated conservatively there were discharged before the twentieth day, 73%; after the twentieth day, 26.9%.

There can be no doubt as to the advantages of the conservative method. The period of treatment, reckoned from the day of entrance; is, in all cases, 6 days longer under treatment by puncture than by the conservative method. Yet these figures are not as complete as at first sight they might seem, as the number of those for a short time under treatment is quite large and by itself would reduce the favorable difference between the two methods. One, however, can obtain a better standard by only comparing the completely cured cases. Here a surprising difference can be formed; the average time being over three days shorter in favor of the conservative method. Again, one sees that not much more than half of the cases treated by puncture were discharged before the twentieth day, but none before the tenth day. By referring to the other group of cases, *i. e.*, those treated conservatively, we see that nearly three-fourths (75%) were discharged before the lapse of twenty days' treatment, and not less than five before the tenth day (one after six and two after eight days). Of the completely cured cases seven were under treatment over twenty days and two over thirty days. The cause of these deviations from the general rule may be easily seen in most cases. Where for a long time, in spite of all treatment, there remained a sensitive spot in some circumscribed part of the bone one may assume that a contusion of the bone, perhaps with formation of a fissure, existed as was seen in several cases. The writer would presume a lesion of the internal lateral ligament to have been present in those cases where treatment extended beyond the ordinary length of time. One case had before had hæmarthrosis of the same joint, to which circumstance must be attributed the longer course of this particular case. One of the writer's cases was remarkable in that it presented an extensive coagulation of the contents of the capsule, which is certainly quite rare in an uncomplicated case of hæmarthrosis. Volkmann's experience (*Zur Punction des Hæmarthrus, Centralblatt f. Chirurgie*, 1880. No. 10) goes to show that the blood within the capsule remains liquid the first three days and even on the fourth to the eighth day the principal mass of the blood is uncoagulated. Secher's (*Loc. Cit.*) and Piéchand's (*De la Punction et d'incision dans les maladies articulaires*, Paris, 1880.)

investigations, also, confirm this view. Bondesen (*Loc. Cit.*) emphasizes especially that coagulation within the first four days after the occurrence of the lesion belongs to the rarest exceptions. According to Kocher's view (*Centralblatt f. Chirurgie*, 1880, No. 20,) the coagulation-inhibitory action of the synovial membrane may be modified under certain conditions, especially if the anterior portion of the capsule of the joint be in communication with wound-surfaces (according to Riedel, "Verhalten von Blut in den Gelenken," *Deutsche Zeitschrift f. Chirurgie*, bd, xii, p. 447), upon which coagulation rapidly begins and thence extends through the blood extravasate within the capsule. But for comparison these seven complicated cases should be excluded, and the average time of treatment required to establish a complete cure was, therefore, fourteen days, which means a saving of one week by the employment of the conservative method. The number of the incompletely cured is quite considerable, but this is due to their leaving the hospital early, on account of their feeling well enough to be up and about; the effusion, however, having not yet entirely disappeared. As none of them ever returned one may safely assume that they ultimately recovered entirely. None of the cases became chronic nor was there hydrarthrosis or relaxation of the ligaments, which are said to follow treatment by the conservative method. None of the cases treated by Dr. Bondesen by puncture ran into chronic hydrarthrosis. The writer also treated two cases by puncture. One of these recovered after eighteen and the other after forty-seven days. Both, however, presented, after recovery, atrophy of the musculature of the lower extremities. Whether this was due to the immobilization or not, the writer leaves undecided.

The conservative method of treatment consists in the following: The injured limb is put into a moulded splint, slightly elevated and an ice-bag applied to the knee. The limb is kept at rest, while ice-bags are applied to prevent an increase of the effusion. During the first few days the patient remains quietly in bed and the treatment confined to simply changing the ice-bags. This is kept up until the patient begins to complain of their being troublesome, which is usually after forty-eight hours. Then they are left off and he is allowed to be a day

with the limb in a moulded splint without a bandage, or with Martin's bandage loosely applied. On the third, fourth or fifth day massage is begun, one séance, of 5 to 10 minutes' duration, being practiced daily. After this Martin's rubber-bandage is applied, care being taken that it does not compress the limb too much. All attention is turned toward inducing rapid absorption, and one is, indeed, often astonished to see what an influence a single performance of massage will have. From the beginning of massage the effusion generally diminishes perceptibly day by day, the mobility of the joint increases and keeps pace with the massage. A few days after beginning to employ massage the patient gets up and hobbles around with a stick, which he gradually leaves off. During the night the limb is placed in a moulded splint and wet compresses are applied. The rubber-bandage being impermeable acts as a portable Russian vapor bath, and, if well applied, gives an agreeable feeling of support. The bandage should only be so applied that the edges lie flatly without forming creases or folds, for if it be stretched any the patient will complain of the bandage being painful, and œdema of the peripheric portions will follow. By this treatment one often avoids the stiffness and sensation of tension in the knee-joint, so often seen after puncture and irrigation, and which requires so long a period of immobilization. If this, however, be present, one will find an efficacious remedy in local vapor-baths (40°C.) employed three times weekly.

The conservative method has the great advantage of being free from any operation, from fever or pains which latter quite frequently follow puncture (Bondesen); but the greatest advantage of all is, that the patient can leave the bed much sooner and attend to his business. This is of eminently practical importance, as after puncture the patient remains for a long time immobilized in bed. This method is also so simple that it can be carried out by all, both in hospitals as well as private practice. The writer finally would limit puncture to those exceptional cases where the effusion remains for a long time unchanged or diminishes slowly.

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